DOCUMENT RESUME

ED 468 444 CE 083 699

AUTHOR	Lai, Su-Huei
TITLE	Cone-Deciphered Modes of Problem Solving Action (MPSA Cone): Alternative Perspectives on Diversified Professions.
PUB DATE	2002-06-15
NOTE	8p.; Paper presented at the Annual Symposium of the Ohio Chinese American Professional Association (18th, Columbus, OH, June 15, 2002). Appendix contains copyrighted material and is not available from ERIC.
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	Adult Learning; *Cognitive Processes; *Critical Thinking; *Decision Making; Information Processing; Information Utilization; Labor Force Development; Models; *Problem Solving; Professional Development; Schemata (Cognition); Staff Development; *Theory Practice Relationship; Thinking Skills

ABSTRACT

A conceptual framework of the modes of problem-solving action has been developed on the basis of a simple relationship cone to assist individuals in diversified professions in inquiry and implementation of theory and practice in their professional development. The conceptual framework is referred to as the Cone-Deciphered Modes of Problem Solving Action (MPSA cone). The conceptual framework of the MPSA was formulated by examining and integrating pragmatism, critical science theory, three modes of inquiry, and practical reasoning. The relationship cone-deciphered MPSA reflects three modes of problem-solving action that interpret these three types of thinking: disposition, research, and knowledge acquisition methodology. The technical model of problem-solving action is illustrated on the top of the MPSA cone, the interpretive mode of problem-solving action is in the middle, and the emancipating mode of action (seeking reasonable, morally defensible, and consensus value ends and taking social action to ensure them) is at the widened base. The knowledge of three modes of problem-solving action may be useful for professionals in fields, including education and information technology, when their fields are engaged in activities such as inquiring about and interpreting humans' cognitive structure while studying the inclination or preference of people retrieving the information presented by technology experts, knowledge acquisition, or staff training. Appended is "Cone-Deciphered Modes of Problem Solving Action (MPSA Cone)" diagram (FEMsys Consulting, Inc., 2002). (Contains 24 references.) (MN)

Reproductions supplied by EDRS are the best that can be made
from the original document.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Su-Huei Lai

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

Cone-Deciphered Modes of Problem Solving Action (MPSA Cone): Alternative Perspectives on Diversified Professions

Su-Huei Lai, Ph.D.

Alumna, College of Human Ecology
The Ohio State University, Columbus, OH, USA.

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Abstract: Cone-deciphered Modes of Problem Solving Action (MPSA Cone) (See Appendix I) indicates three types of thinking disposition that reflect technical, interpretive, and emancipating problem solving actions. MPSA Cone may serve as an alternative to examine and interpret self or others of diversified professionals in relation to the subject matter of their professions while confronting a problem.

ED 468 444

INTRODUCTION

Because human's well-being may be socially, culturally, and environmentally constructed, understanding three Modes of Problem Solving Action (MPSA) (Lai, 1995; Lai & Laster, 1996; Lai, 2000a; 2000d) performed by individuals or a group of people in diversified professions is essential for the professionals to inquire and implement theory and practice in their professional development. With this respect, the intend of this paper is to elaborate MPSA with a simple relationship cone thereby to aid the professionals, who want to apply MPSA, to have a clearer conceptual framework about human's thinking dispositions and the related actions.

INTERPRETATION OF MPSA CONE

The conceptual framework of Modes of Problem Solving Action (MPSA) was formulated by examining and integrating pragmatism (Dewey, 1910, 1916; Gutec, 1988), critical science theory (Habermas, 1992), three modes of inquiry (Brown, 1979; Brown and Paolucci, 1979; Brown, 1985; 1986; Young, 1990; Habermas, 1992; Giarelli, 1992), and practical reasoning (Laster, 1987). The relationship-cone-deciphered MPSA (MPSA Cone) (Lai, 1995) reflects three modes of problem solving action, which interpret three types of thinking disposition, research, or knowledge acquisition methodology. The technical mode of problem solving action is illustrated on the top of the MPSA Cone. The interpretative mode of problem solving action is in the middle whereas the emancipating mode of action is on the widened bottom.

Technical problem solving action indicated on the top portion of the MPSA Cone (Lai, 1995) refers to the strategic action which uses empirical inquiry and manipulated ways of knowing or doing for the purpose of control (Brown, 1986; Thomas, 1986; Way, 1989). A technical problem solver may apply the technical action in the phase of practical reasoning derived from Dewey's scientific methods. For example, the technical problem solvers follow theories to explain a problem or apply experts' rules to clarify a problem. They analyze the problematic factors of the problem by using evidence drawn from previous research findings or experts' models. To select possible solutions, they apply pre-built and fixed structures, or universal formulas. To analyze the consequences,

CE063699

BEST COPY AVAILABLE

technical problem solvers trace the loop of the structure and use pre-assumptions to estimate cause-effects or generalize results from pre-research findings to predict possible outcomes. To select the best solution, technical problem solvers may test their methods by examining whether the selected method is efficient and manageable. Then go back to the theorists, authorities, or experts to make sure those objective methods they used followed or fit the rules or the structure. In planning the action, technical problem solvers follow those pre-defined rules and those pre-determined structures that they used to design their procedures. Bureaucratic administrators, traditional types of teachers, police, mathematicians, or engineers may often apply such methods to solve their problems in their working place. The salient features of technical actions are quick, organized, pre-planned, and efficient. However, the weaknesses are that the technical actions may be oversimplified and the optimistic procedures might screen out something important or include something misunderstood. Strategies, methods, and values from the technical perspectives are quite different from those with interpretive perspectives (Lai, 1995; Lai & Laster, 1996; Lai, 2000a; 2000d).

The interpretive problem solving action shown in the middle of the MPSA Cone (Lai, 1995) refers to "the rationally motivating force of achieving understanding" (Habermas, 1992, P. 90). The focus is on the meaning of symbols used in communication, of values, of concepts, of reasons, of intentions in practice or action. The purpose of the interpretive action is to identify common principles for solving a problem. The interpretive problem solvers define a problem based on the interpretation of people involved through communicating with them. They clarify problems by using common problematic symbols, actions, and interpretations by communicating with those involved. They present inter-subjective views of people in the problematic situation to analyze the problem. In a similar way, they explore possible solutions by use of democratic communication. To analyze the consequences for possible solutions, the interpretive problem solvers focus on both diverse meanings and shared common experiences from the people involved through communicating with them. Since the problem solvers and people involved in the problematic situation are mutually respected, the best choice in light of inter-subjective views is toward normative needs through understanding the common interpretation of a group of people. In addition, because the focus is on the democratic and shared experiences through dialectic communication, the approach and action plan remain open-ended (Lai, 1995; Lai & Laster, 1996; Lai, 2000a; 2000d).

The emancipating actions presented on the bottom of the MPSA Cone (Lai, 1995) refer to the critique format that traces behavioral norms back to underlying ideology through dialectical interaction in a real world situation (Brown, 1985; Coomer & Hultgren, 1989; Giarelli, 1992; Thomas, 1989). The purpose of emancipating actions is to seek reasonable, morally defensible, and consensus value ends and takes social actions to ensure these value ends. The emancipating problem solvers critique the reality between the technical and interpretive information. They examine the validity claim in both situations. While analyzing a problem, the emancipating problem solvers analyze conflicts between the theoretical predication and true meanings of people involved in the problematic situation by using the in-depth language. In so doing to seek possible solutions, they focus on reasoning of social economics, and political concerns with people's linguistic expression and their gestures. They also use reasoning to analyze consequences for possible solutions so that the best choice is an intellectual and morally

defensible solution. Such complexity requires problem solvers' critical thinking and psychoanalytical capability to understand personality in self and others in dialectic conversation. Moreover, through dialogue and disclosing self awareness, the value end will be sought in a collegial situation and draw a conceptual framework for the actions based on the true meaning of those people involved in the problematic situation (Lai, 1995; Lai & Laster, 1996; Lai, 2000a; 2000d).

The MPSA Cone indicates that the more emancipating type of problem solvers tend to use skeptical views, inductive methods, and critical thinking empowered by disclosing self and others involved in the problematic situations. The biggest oval in the cone represents the relatively complicated thought dynamically processed in an on-going manner dwelt in the emancipating problem solvers. On the contrary, the more technical or empirical type of problem solvers have the inclination toward following pre-determined theories, deductive methods, structured formats, technical results or findings analyzed or concluded by the experts with manipulated and scientific methods. The smallest oval indicates the simplicity, efficiency, and the effectiveness constituted in the thought of technical problem solvers.

MPSA CONE AND ITS IMPLICATIONS FOR DIVERSIFIED PROFESSIONS

The knowledge of three modes of problem solving action illustrated by the MPSA Cone may be useful for diversified professionals when their fields are engaged in human's thinking dispositions, knowledge acquisitions, or staff training. The following paragraphs describe alternative perspectives of the MPSA Cone used in the areas of Education, Information Technology, Psychology, Family & Consumer Science Education, Health related professions, Business, and Engineering.

In the area of education, the MPSA Cone can be applied in many aspects. For example, it may serve as an alternative method for the need assessment, which is one of the important factors to accomplish effective teaching and learning. Studying the common and different needs of different modes of problem solvers in the classroom provides valuable resources for educators to prepare appropriate teaching methods and materials. For example, a technical student may be confused by an emancipating teacher because of their mismatch in modes of problem solving. On the contrary, an emancipating student may be reluctant to follow a fixed teaching method provided by a technical teacher (Lai, 2000b). Such an alternative approach, technical, interpretive or emancipative, may be observed in the settings of "Teaching Statics With Maple via Visualizing Vectors in Three-Space" (Hsiao & Lai, 2002). Moreover, articulating theory and practice into classroom settings requires in-depth thinking about the subject matter and the people involved. Thus, understanding MPSA Cone will be helpful for implementing variety of teaching models such as Model of Teaching, Learning, and Classroom Management (MTLM) (Lai, 2000c; 2001).

In the area of Information Technology, MPSA Cone may provide alternative inquiry and interpretations regarding human's cognitive structure while studying the inclination or preference of people retrieving the information presented by the technology experts. How do people retrieve the clues from their own cognitive structure? Is there any

alternative way to answer the questions beyond the study of brain functions? How does technology stimulate the first ferment of different viewers and reinforce the sense of continuity in their thoughts? For example, by holding the nature environment (e.g. Viewers' IQ) and physical environment (e.g. classroom settings) constant, are there any significant differences on the learning efficiency among different modes of problem solving viewers in confronting a given knowledge structure/instructional media?

In the areas of Psychology, Counseling, Family and Consumer Sciences Education or Health related professions, studying different degrees of stress and the related consequences caused by different modes of problem solving action illustrated in the MPSA Cone may provide some guidelines for the professionals to deal with their clients and their own professional development. For example, a married couple may fell into a turmoil situation when the cumulated stress caused by their different modes of problem solving action. A particular parenting pattern, P-p+, in terms of Values and Consistency Patterns in Parenting (VCPP) (Lai, 1999; 2002), may seriously disturb the moral and intellectual growth in the development of a child. Such patterns may be further interpreted with the MPSA Cone. One interesting question follows: what will happen if the technical mode of problem solvers cannot solve their own problems? Are they prone to get a stroke when compared to other types of problem solvers? How do professionals prevent these problems of their own? These concerns lead to the further questions about the culture of these professions. For example, one may wonder which mode of problem solving action is more appropriate for these professionals to collect valid data from their clients.

In the business settings, MPSA Cone may provide useful resources for a company to identify or recruit a comprehensive CEO, fund managers, or stock market analysts who are capable of making profits for their business and investment. When economy is in up-trend, most cooperate CEO, fund managers or investors can make profits by their own ways. However, when the economy is down, there may be only a small group of people who could survive. It will be useful and is interesting to know whether the technical mode CEO or fund managers do better jobs when compared to the emancipating mode ones during the downtime of the economy.

Furthermore, MPSA Cone may serve as an alternative to decipher how robot works in different styles. Can robots simulate human's actions that are technical, interpretive, or emancipating? Perhaps, it will be easier for engineers to design a technical problem-solving robot than interpretive and emancipating ones. The terminology and interpretation used in the MPSA Cone may also serve as a communicating link between the social and the natural sciences.

REFERENCES

Brown, M. M. (1979). A conceptual scheme and decision rules for the selection and organization of home economics curriculum content. Madison Wisconsin: Department of Public Instruction

Brown, M. M. & Paolucci, B. (1979). Home economics: A definition. Washington, DC: American Home Economics Association.

Brown, M. M. (1985). Philosophical studies of home economics in the United States: Our practical-intellectual heritage: East Lansing, Michigan: College of Human Ecology, Michigan State University.

Brown, M. M. (1986). Home economics: A practical or technical science? In J. F. Laster, & R. E. Dohner (Eds.). Vocational home economics curriculum: State of the field (pp. 39-55). Peoria, Illinois: American Home Economics Association.

Coomer, D. L. & Hultgren, F. H. (1989). Considering alternatives: An invitation to dialogue and question. In F. H. Hultgren, & D. L. Coomer,(Eds.). Alternative modes of inquiry in home economics research. Menomonie, Wisconsin: American Home Economics Association.

Dewey, J. (c1910). How we think. Washington, D. C.: Heath and Company.

Dewey, J. (c1916). Democracy & education, New York: The Macmillian Company.

Gentzler, Y. S. (1987). A conceptualization of competence: Constructs for professional development. Journal of Home Economics, 79, 39-42

Giarelli, J. M. (1992). Critical theory and educational research. Qualitative Studies in Education, 3(1), 3-5.

Gutek, G. L. (1988). Philosophical and ideological perspectives on education. New Jersey: Prentice Hall Inc

Habermas, J. (1992). Postmetaphysical thinking: Philosophical essays, (W. M. Hohengarten, Trans.). Massachusetts: The MIT Press.

Hultgren, F. (1989). Using interpretive-critical inquiry perspective to study critical thinking in home economics. Journal of Vocational Home Economics Education. 7(1). 10-35

Hsiao, H. S. & Lai, S. H. (2002). Computer aided instruction:-Teaching Statics with Maple via visualizing vectors in three-space. The 18th Symposium of Ohio Chinese American Professional Association Proceedings, June 15, 2002, Columbus, Ohio.

Lai, S.H. (1995). The development of a modes of problem solving action Instrument for Family and Consumer Sciences Education. (Doctoral dissertation, The Ohio State University, Publication No. AAT9612219, 1995), Dissertation Abstracts International, A56\12, P. 4597, 1996.

Lai, S. H., & Laster, J. F. (1996). The development of a modes of problem solving action inventory for Family and Consumer Sciences Education. Paper presented at the XVIII World Congress of International Federation for Home Economics (IFHE Research Abstracts, p. 34), July 21-26, 1996, Bangkok, Thailand

Lai, S. H. (1999). A clinical model of parents' awareness for effectiveness of teaching Chinese American Chinese language. Fairfax, Virginia: The Seventh Annual International Conference of Chinese American Educational Research and Development Association (ERIC Document Reproduction Service, No. ED 454 717)

Lai, S.H. (2000a). Conceptual framework of modes of problem solving action (MPSA): Implications for teacher education [Summary]. The Proceedings of Ohio Chinese American Professional Association Symposium 2000, May 27-28, 2000 (p. 50), Athens, Ohio

Lai, S.H. (2000b). Principles and suggestions for developing effective Web-based lessons. Jamaica, New York: The Eighth Annual International Conference of Chinese American Educational Research and Development Association (ERIC Document Reproduction Service, No. ED 456 810)

Lai, S. H. (2000c). A comprehensive model for teaching, learning, and classroom management: A summarized report of longitudinal research results collected from schools in Taiwan and USA. Paper presented at ACTE Annual Convention, December, 7-10, 2000, San Diego, CA

Lai, S.H. (2000d). Conceptual framework of modes of problem solving action (MPSA): Implications for Internet teaching and learning. Jamaica, New York: The Eighth Annual International Conference of Chinese American Educational Research and Development Association (ERIC Document Reproduction Service, No. ED 452 413)

Lai, S. H. (2001). Implementation of comprehensive Model for Teaching, Learning, and Classroom Management (MTLM) in classes in a Columbus-Ohio Southeast school district: MTLM Series (1). The Proceedings of Ohio Chinese American Professional Association Symposium 2001, June 1-2, 2001 (p.31), Kent, Ohio.

Lai, S. H. (2002). On Values and Consistency in Parenting Patterns (VCPP): Two P-p+ case studies. The 18th Symposium of Ohio Chinese American Professional Association Proceedings, June 15, 2002, Columbus, Ohio

Thomas, R. (1986). Alternative views of home economics; Implications for K-12 home economics curriculum. Journal of Vocational Home Economics Education, 4(2). 162-191.

Way, W. L. (1989). Examining critical thinking in home economics education: An empirical/analytical perspective. Journal of Vocational Home Economics Education, 7(1). 1-9.

Bio of Dr. Su-Huei Lai

Dr. Su-Huei Lai earned her Ph.D. degree in Family and Consumer Sciences Education from the College of Human Ecology with minors in Educational Research and Instructional Technology from the College of Education, the Ohio State University. She obtained her M.S. degree in Microcomputers in Education from the College of Education, Ohio University. There, she also completed all required doctoral courses in Instructional Technology and earned her doctoral advanced standing status. Her B.S. degree was in Guidance with a minor in English, awarded by National Changhua University of Education. Dr. Lai was a recipient of Educational Research Awards (1981, 1982,1984) conferred by Kaohsiung Educational Bureau in Taiwan and a recipient of Darlymple Research Award as well as Human Ecology Research Award at the Ohio State University (1994). Her areas of interest include Instructional Technology in Language Art and Family and Consumer Science Education, Educational Research, Measurement & Evaluation, Parenting, and Problem solving & Critical Thinking in diversified educational areas that comprise vocational Education.

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: Cone-Deciphered Modes of Problem Solving Action (MPSA Cone): Alternative Perspectives on Diversified Professions	
Author(s): Lai, Su-Huei	
Corporate Source: Presented at The 18th Annual Symposium of Ohio Chinese American Professional Association (OCAPA Symposium 2002), Columbus, OH	Publication Date: 6/15/2002

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents	The sample sticker shown below will be affixed to all Level 2A documents	The sample sticker shown below will be affixed to all Level 2B documents
PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) 1	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) 2A	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) 2B
Level 1 ☒ Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) *and* paper copy.	**Level 2A** ☐ Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only	**Level 2B** ☐ Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Signature:	Printed Name/Position/Title:
Lai Su-Huei	Lai, Su-Huei Vice President of Femsys Consulting, Inc.

Organization/Address:	Telephone:	FAX:
Femsys Consulting, Inc. 2525 Bristol Road, Columbus, Ohio	(614) 442-1075	(614) 442-1075
	E-Mail Address: laihsuo@hotmail.com	Date: ~~6/15/2002~~ 4/2/2003

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, or, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

ERIC Processing and Reference Facility
4483-A Forbes Boulevard
Lanham, Maryland 20706

Telephone: 301-552-4200